NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

RESIDUE MANAGEMENT, SEASONAL
(Acre)

Code 344

DEFINITION

Managing the amount, orientation, and distribution of crop and other plant residues on the soil surface during part of the year, while growing crops in a clean tilled seedbed.

PURPOSES

This practice may be applied as part of a conservation management system to support one or more of the following:

- reduce sheet and rill erosion;
- reduce soil erosion from wind;
- manage snow to increase plant available moisture;
- conserve organic nutrients and reduce fertilizer and herbicide inputs, or;
- provide food and escape cover for wildlife.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all cropland and other land where crops are grown.

This standard includes residue management methods practiced during the part of the year from harvest until residue is buried by tillage for seedbed preparation.

CRITERIA

General Criteria Applicable to All Purposes Named Above

To apply this practice, uniformly distribute loose residue to be retained on the soil surface. Combines or other harvesting equipment require spreaders or other devices capable of redistributing residues over at least 80 percent of the working width of the header unless other means of uniform distribution are achieved.

Residues shall not be burned under dryland production. Under irrigated conditions, infrequent burning to treat a specific problem (e.g. disease) may be practiced if a full evaluation of the impacts on soil, water, air, plant, and animal resources indicates no negative effects.

Additional Criteria to Reduce Sheet and Rill Erosion

When applying this practice to reduce sheet and rill erosion by water, use the Revised Universal Soil Loss Equation (RUSLE), or its' successor to determine the amount of residue needed to reduce erosion within the soil loss tolerance (T) or any other planned soil loss objective.

Limit partial removal of residue by means such as baling or grazing, to retain the amount needed. Maintain the remaining residue on the soil surface through periods when sheet and rill erosion has the potential to occur, or until planting, whichever occurs first. Account for the effects of other practices in the conservation management system in all calculations.

Limit any tillage that occurs during the management period to methods which leave residue on the surface, and maintain the planned cover conditions.

Additional Criteria to Reduce Soil Erosion From Wind

To apply this practice to reduce soil erosion from wind, use current wind erosion prediction technology to determine the amount and orientation of residue needed to reduce erosion within the soil loss tolerance (T), or any other planned soil loss objective.

Limit partial removal of residue by means such as baling or grazing to retain the amount needed. Maintain remaining residue on the soil surface through periods when soil erosion by wind has the potential to occur or until planting, whichever occurs first. Account for the effects of other practices in the conservation management system in all calculations

Limit any tillage that occurs during the management period to methods which leave planned residue amounts on the surface, and maintain the planned cover conditions.

Additional Criteria to Manage Snow to Increase Plant Available Moisture

To apply this practice for the primary purpose of snow harvest, leave stubble or other crop biomass standing as high as possible by the harvesting operation, but not less than 6 inches in any case.

Maintain stubble in a standing orientation over winter to trap and retain snow. Loose residue may be removed provided the remaining residue is left standing.

Limit any tillage that occurs during this period to undercutting tools such as blades, sweeps, or deep tillage implements such as rippers, subsoilers, or straight point chisels.

Additional Criteria To Conserve Organic Nutrients And Reduce Fertilizer And Herbicide Inputs

When the primary purpose of this practice is to conserve organic nutrients and reduce fertilizer and herbicide inputs, return all crop residue, including volunteer grain to the soil. Chop or shred and partially incorporate residues before midday soil temperatures drop below 60 degrees Fahrenheit in the fall. If irrigation is available, maintain soil moisture at or above 50 percent available water holding capacity.

Additional Criteria to Provide Food and Escape Cover for Wildlife

When applying this practice to provide food and escape cover for wildlife, use an approved habitat evaluation procedure to determine the amount of residue, height of the stubble, and length of the management period necessary, for meeting habitat requirements of the target species or wildlife population.

Do not remove, till, or irrigate residues unless it is determined by the habitat evaluation procedure that such removal will not adversely affect habitat values.

Tillage shall be delayed until the end of the management period to maintain the food and cover value of the residue.

If unsprouted waste grain is needed for the target species, tillage and irrigation will be delayed until the end of the management period, to reduce sprouting and maintain the food and cover value of the residue.

CONSIDERATIONS

Excess removal of plant residue by burning, baling, grazing, or mis-timed cultural practices, often produces negative impacts on resources. These activities should not be performed without full evaluation of impacts on soil, water, air, , plant, and animal resources.

Production of adequate amounts of crop residue necessary for the proper functioning of this practice can be enhanced by selection of high residue producing crops and crop varieties in the rotation, by the use of cover crops, and by adjustment of plant populations and/or row spacing.

When planting on a clean seedbed, exposure to erosion can be minimized by completing tillage and planting in a single operation, or by performing primary tillage no more than three days before planting.

When planting on a clean seedbed in areas with limited moisture, moisture for germination can be increased by completing tillage and planting in a single operation, or by performing primary tillage no more than three days before planting.

The effectiveness of stubble to trap snow increases with stubble height. Variable height stubble patterns may be created to further increase snow storage.

Crop residues can provide carbon, nitrogen, phosphorus, potassium, and other nutrients needed to sustain crop production, and maintain soil organic matter and tilth. Undecomposed crop residues can immobilize nitrogen, and volunteer grain can increase tillage and herbicide costs. Major factors which limit sprouting of waste grain and residue decomposition are inadequate incorporation and cold dry soil.

The value of residue for wildlife habitat can be enhanced by leaving rows of unharvested crop standing at intervals across the field.

PLANS AND SPECIFICATIONS

Specifications for establishment and operation of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and O&M described in this standard.

Specifications shall be recorded using approved certification sheets, job sheets, narrative statements in the conservation plan, or other acceptable methods.

OPERATION AND MAINTENANCE

No operation and maintenance requirements, national in scope, have been identified for this practice.

REFERENCES

Agriculture Handbook Number 703, Predicting Soil Erosion by Water: A Guide To Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE).

Colorado Field Office Technical Guide, Section IV.

Colorado Field Office Technical Guide, Section V.